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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,638	02/12/2004	Mitsuru Kitamura	Q79888	1759

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EXAMINER	
BOUTSIKARIS, LEONIDAS	
ART UNIT	**PAPER NUMBER**
2872	

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/776,638	KITAMURA, MITSURU	
	Examiner	Art Unit	
	Leo Boutsikaris	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/12/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 21-22 are objected to because of the following informalities:

Claim 21, line 7, recites "the virtual points", which lacks antecedent basis.

The language of claim 22 is identical to that of claim 20, from which it depends. For examination purposes it is taken that claim 22 is dependent from claim 21 instead.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11-16, 19-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 11, 13, 15, 19, 21 recite that "a luminance of the diffraction light from the virtual points [is] equal to a luminance of light from a point S on the object." The above phrase is not clear for two reasons: first, it is not specified at which spatial point/plane the luminances are measured; second, it is not clear whether the luminance from each individual virtual point is equal to a corresponding luminance from a point on the object, or if the total luminance from all the virtual points is equal to the total luminance from the whole object. For examination

purposes, it will be taken that the luminances are measured at the hologram plane and that luminance from each virtual point is equal to a luminance from a corresponding point on the object.

Claims 12, 14, 16, 20, 22 inherit the deficiencies of claims 11, 13, 15, 19, 21, from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Haines (US 5,475,511).

Haines discloses a method for making a computer generated hologram, wherein the hologram comprises a plurality of cells 12, each cell having information related to a luminance of a virtual point light source 22 from a plurality of virtual point light sources, the luminance corresponding to a point 32 on the object, wherein the point is on a straight line between the cell 12 and the virtual point light source 22. Comparing Figs. 1, 2, it is noted that holographic plane 10 (having axes x-y-z) in Fig. 1 corresponds to holographic plane 10 in Fig. 2, and plane 20 (having axes x_p-y_p-z_p) in Fig. 1 corresponds to plane 42 (having axes x_p-y_p-z_p) in Fig. 2, wherein element 42 comprises a plurality of object lights which interfere with reference light 18 to record the elemental holograms 12 in plane 10 (line 58, col. 3 to line 61, col. 4).

Claims 11-12, 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kitamura (JP 11-202741).

Regarding claims 11, 19, Kitamura discloses a method for making a computer generated hologram, the hologram comprising a plurality of cells B (see Fig. 3), the hologram having information recorded therein so that a stereoscopic image of an object 10 is created (inherent in holographic images), the hologram operable to receive reconstruction illumination light so that diffraction light, i.e., light carrying information about the object, is reconstructed (inherent in holographic recording), the diffraction light diverging from a plurality of virtual point light sources Pi on the side of the hologram opposite to the viewing side (i.e., transmission geometry), a luminance of the diffraction light from the virtual point Pi being equal to a luminance of light from a point S (the same) on the object 10. See also the Abstract.

Regarding claims 12, 20, the virtual point light sources are grouped in two-dimensional straight lines Aj (see Fig. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13-16, 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura (JP 11-202741).

Kitamura discloses all the limitations of the above claims except teaching that the holographic recording is performed in a reflection geometry instead of transmission geometry (where both object and reference light beams are on the same side of the holographic recording medium during recording). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the virtual point light source approach of Kitamura in conjunction with a reflection recording configuration, since Official Notice is taken that the reflection geometry configuration is widely used in the field of holographic recording, since reflection holograms can be reconstructed using white light as opposed to monochromatic light, and furthermore, full color imagery is possible if the reflection hologram is made with coherent light of primary colors.

Claims 10, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haines (US 5,475,511) in view of Kitamura (JP 11-202741).

Haines discloses all the limitations of the above claims except for teaching that the virtual point light sources used in the computer-aided computation of the interferometric fringes on the holographic recording plane are arranged in two-dimensional stripes. As described above, Kitamura discloses a holographic recording method for making computer generated holograms, wherein two-dimensional stripes of virtual point light sources are used in the computation of the interferometric fringes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the point light sources in Haines's method in the way described by Kitamura, since the segmented nature of the object light during recording allows for better stereoscopic imagery during reconstruction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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July 5, 2005

LEONIDAS BOUTSIKARIS
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